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Smooth Sailing with the Project Navigator

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BD34-1L Learn the basics of the Autodesk Architectural Desktop Project Browser and the Project Navigator. We will start by setting up levels based on project content and taking advantage of these new capabilities to manage building information and the building model. We'll also create views and sheets using this powerful new tool. This class is designed for users who are proficient with building model creation in Architectural Desktop 2004 or newer releases but have little or no experience with the Project Browser/Project Navigator interface in Architectural Desktop.

Who Should Attend
Users of Autodesk Architectural Desktop of all skill levels

Topics Covered
* Using and setting up the Project Browser for a project environment
* Creating levels and divisions
* Creating constructs and assigning levels
* Creating views, models, sections and elevations
* Setting up sheets and plotting

About the Speaker:
A registered architect with 17 years of experience in Autodesk® architectural applications, Matt has worked with AutoCAD Architectural Desktop™ since the initial release and is a moderator in the Autodesk discussion forums on the product. In addition to being an Autodesk® Certified Instructor at an Autodesk® Authorized Training Center and providing end-user technical support, he assists customers in implementing Autodesk® Architectural Desktop. He also consults with Autodesk development staff in product design and usability. Currently, Matt is promoting the adoption of Building Information Modeling in the United States.

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Introduction

The project for this lab will be a five-story apartment building. We will divide it into two *divisions*: "East Wing" and "West Wing". Using Project Navigator, we will be able to assemble *views* of the model based on *levels* and *divisions* for floor plans, elevations, sections and 3D views.

We will start out by creating the project and setting up the model structure. Then we will assemble the various *constructs* and *elements* that make up the model geometry. Following that we will generate various *view drawings*, containing plans, sections and elevations, as well as detail views. Finally, we will place these on *sheets* and review the plotting and publishing features of the *Sheet Set Manager*.

Setting up the Project

We will use *Project Browser* to set up our project. In Project Browser, you create projects and manage all data about the project that does not pertain to the geometric structure of the project.

- From the pulldowns, select **File->Project Browser...**
- In Project Browser, use the navigation window on the left to navigate to the directory **C:\Datafiles\BD31-4L** (double click on the folder to make it the current folder)
- Create the new project by picking the "New Project" button in the lower left corner of the dialog box. (See the image to the right).
- Enter the *Project Number* as **BD31-4L** and the *Project Name* as **Apartments**. If you like, you can fill in a description, although that is not necessary. When you are finished, your project properties dialog box should look like the one below (some of the pathing may be different, but the file names and other data should be the same).
- Exit Project Browser after you have finished reviewing the data.

Property	Value
Number	BD31-4L
Name	Apartments
Description	
Bulletin Board	C:\Program Files\Autodesk Architectural Desktop 2005\ADT Sample Project Bulletin Board.htm
Project Image	C:\Program Files\Autodesk Architectural Desktop 2005\ADT_Default_Project_Image.bmp
Prefix Filenames with Project Number	No
Default Construct Template	C:\ADT 2005 Support\Content\Templates\Aec Model (Imperial Stb).dwt
Default Element Template	C:\ADT 2005 Support\Content\Templates\Aec Model (Imperial Stb).dwt
Default Model View Template	C:\ADT 2005 Support\Content\Templates\Aec Model (Imperial Stb).dwt
Default Section/Elevation View Template	C:\ADT 2005 Support\Content\Templates\Aec Model (Imperial Stb).dwt
Default Detail View Template	C:\ADT 2005 Support\Content\Templates\Aec Model (Imperial Stb).dwt
Project Sheet Set Template	C:\ADT 2005 Support\Content\Templates\Aec Sheet Set (Imperial Stb).dst
Project Details Template	C:\ADT 2005 Support\Content\Templates\Aec Project Details.apj
Display Only Project Detail Component Databases	No
Display Only Project Keynote Databases	No

Establishing Levels and Divisions

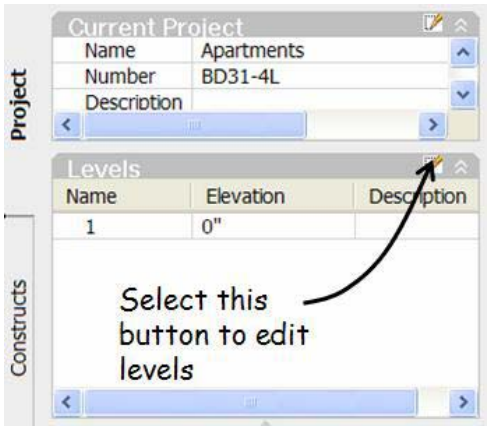
After creating your new project, Project Navigator should be available on your screen. If not, use the pull-down menus and select **Window->Project Navigator Palette**. In the Project Navigator, select the "Project" tab. This is where you begin to describe the project structure in a general sense.

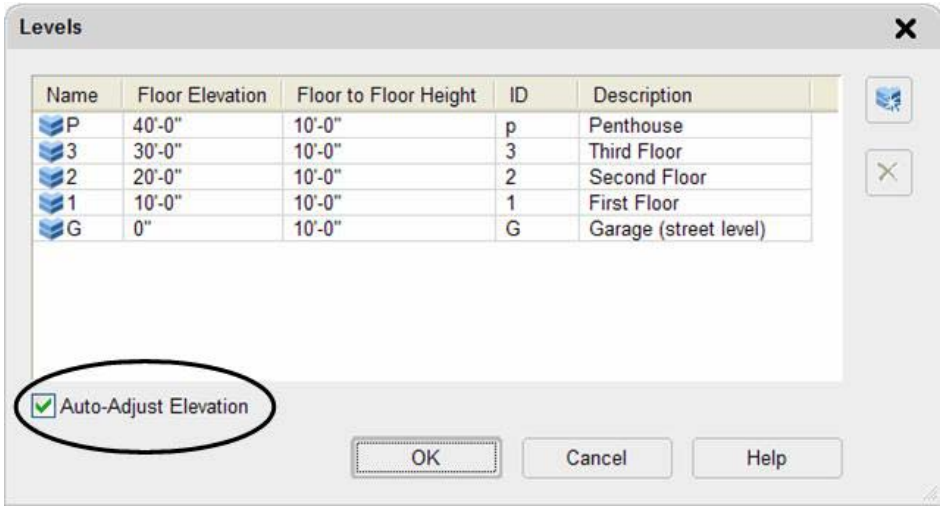
Setting up the Levels

- Select the "Edit Levels" button in the "Project" tab of the Project Navigator (see the image to the right).
- Edit the existing level as follows:

  Name: **G**
  Floor Elevation: **0"**
  Floor to Floor Height: **10'-0"**
  ID: **G**
  Description: **Garage (street level)**

- Making sure that "Auto-Adjust Elevation" is checked on and using the "Add Level" button, add the rest of the levels so that your settings look like the figure below and select "OK".

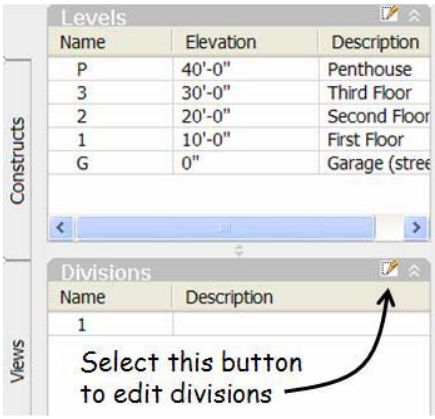




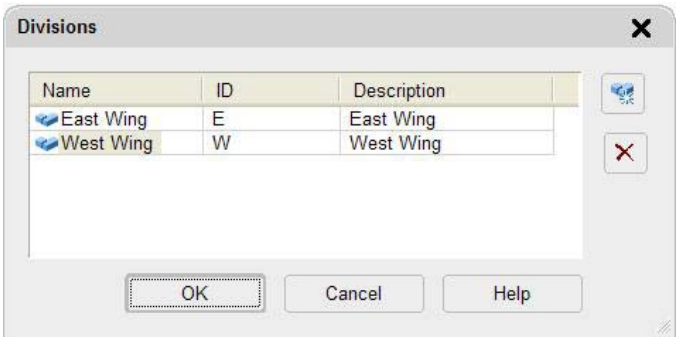
Setting up the Divisions

- Select the "Edit Divisions" button in the "Project" tab of the Project Navigator (see the image to the right).
- Edit the existing division as follows:

  Name: **East Wing**
  ID: **E**
  Description: **East Wing**



- Using the "Add Divisions" button add the "West Wing" division as shown in the image to the right and select "OK".



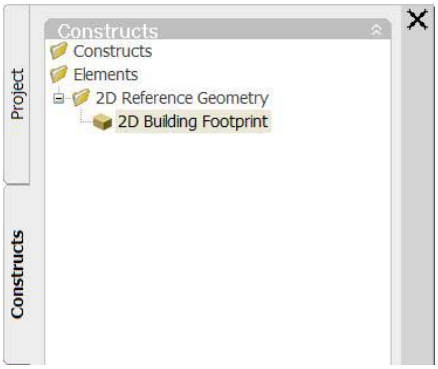
Adding Constructs and Elements

We will begin by creating *elements* that will later be used in our *constructs*. Elements are components of the building model that can re-occur multiple times in the model. As such, they don't have any information attached to them about "where they live" in the model. Constructs, on the other hand, should only occur once in a model, and will have properties that define exactly what parts of the model they occupy. When working with elements and constructs, it is very important to have a clear understanding of the ramifications of XREF's that are *attached* versus XREF's that are *overlaid*.

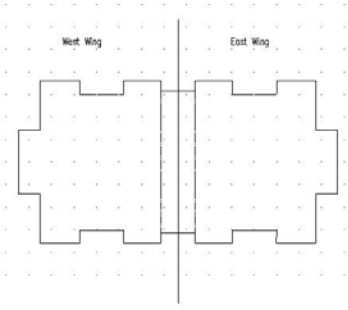
Once all of the "typical" elements are created, we will assemble a few typical constructs before moving on to a more complete version of our project to begin working with *views*.

Creating the 2D Footprint Element

In the Project Navigator, go to the "Constructs" tab.



- Select the "Elements" folder, right-click and select **New->Category.**
- Name the new category "2D Reference Geometry"
- With the "2D Reference Geometry" category selected, right-click and select **New->Element**.
- In the "Add Element" dialog box that appears, name the new element "2D Building Footprint" and select "OK". The Project Navigator display should look like the figure to the right.
- Double click the "2D Building Footprint" element in the Project Navigator to open it. (This is the way to open files when using project management – do not use the "Open" command).



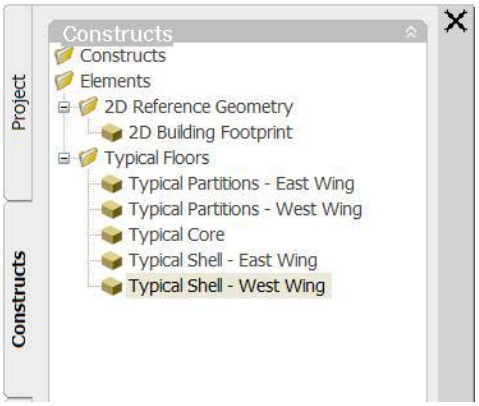
- Use the "Insert" command to insert the file "**Building Footprint**" from the "**C:\Datafiles\BD31-4L\Source Drawings\Elements**" folder for this lab at the coordinates 0,0,0. This will save you the trouble of drawing the geometry. Make sure you insert the block exploded, or explode it after you insert it. Your drawing should contain the geometry shown to the right.
- Save and close the element.

It is a good idea to generate a simple 2D sketch such as this, especially if you are using divisions to make sure that you are drawing your building components in the correct location for the parts of the model they occupy.

Building the "Typical" Elements

- Using the techniques in the last steps, create a new category under "Elements" called "Typical Floors".
- Create a new element called "Typical Partitions – East Wing" and open it.
- From the Project Navigator, right-click on the "2D Building Footprint" element and select "XREF Overlay". It should appear in your drawing. You can also drag and drop elements into drawings, but when done in that manner, they will come in as attachments. Since this element does not need to follow the model geometry into any views, "Overlay" is more appropriate.
- Insert the drawing "**Typical Partitions – East Wing**" from the "**C:\Datafiles\BD31-4L\Source Drawings\Elements**" folder in the same manner as the 2D building footprint from the previous steps. It should appear on top of the 2D geometry on the section marked "East Wing". Again, this simulates actually drawing the geometry.
- Save the element and close it.
- Using the same steps as those outlined above, create the following elements and insert the associated source drawings, making sure each one comes in at coordinates 0,0,0 and exploded:

  Typical Partitions – West Wing
  Typical Core
  Typical Shell – East Wing
  Typical Shell – West Wing



Once you have saved and closed all elements, your project navigator display should look like the figure to the right.

Creating the 2nd Floor Constructs

- Using the techniques from the previous steps, create three new categories under the "Constructs" folder: "Core", "Partitions" and "Shell".
- In the "Shell" category, create a new construct. Since constructs must exist in an explicit part of the model, you will need to provide more information. Name the construct "Shell02E", provide a description of "2nd floor shell, east wing". In the matrix for "Assignments", select the box under the "East Wing" division for the 2nd Floor. The "Add Constructs" dialog should look like the image to the right.

Property	Value
Name	Shell02E
Description	2nd floor shell, east wing
Category	Constructs\Shell
File Name	Shell02E

Assignments

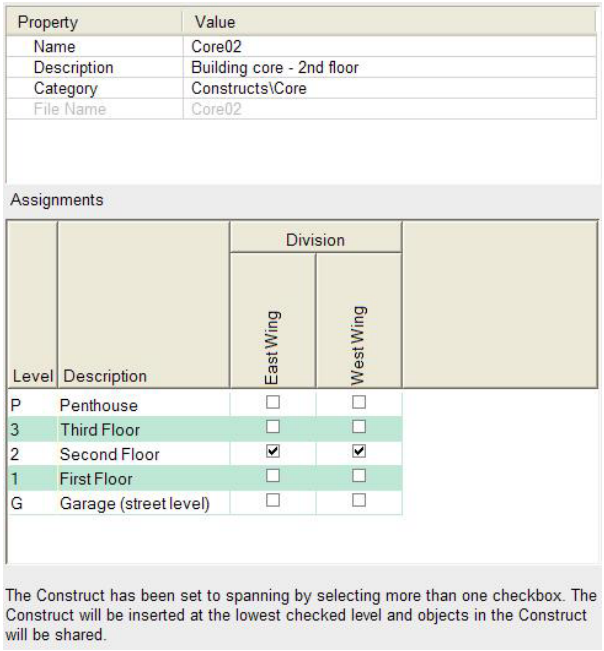
Level	Description	Division: East Wing	Division: West Wing
P	Penthouse	☐	☐
3	Third Floor	☐	☐
2	Second Floor	☑	☐
1	First Floor	☐	☐
G	Garage (street level)	☐	☐

- Select "OK" to finish creating the construct.
- Double click the new "Shell02E" construct to open it.
- From the Project Navigator, locate the "Typical Shell – East Wing" element that you created earlier. Select it and drag it into the drawing area. This will attach the element as an XREF (using the "Attach" option so that it will "follow" the current construct into any views it winds up in).
- Save and exit the "Shell02E" construct.

- Create the following 2nd floor constructs in the appropriate categories:

Construct Name	Category	Description	Level	Division	Remarks
Shell02W	Shell	2nd Floor shell, west wing	2	West Wing	Drag and drop (attach) element "Typical Shell – West Wing".
Partitions02E	Partitions	2nd floor partitions, east wing	2	East Wing	Drag and drop (attach) element "Typical Partitions – East Wing".
Partitions02W	Partitions	2nd floor partitions, west wing	2	West Wing	Drag and drop (attach) element "Typical Partitions – West Wing".

- Create the 2nd floor core construct. This will be a "spanning construct" because it will actually occupy portions of both the East and West divisions. Create the construct in the "Core" category and provide a name of "Core02" with an appropriate description. In the "Assignments" section of the dialog box, select both the "East Wing" and "West Wing" divisions for the 2nd floor. You will be notified at the bottom of the dialog that this is now a spanning construct. The dialog should look like the image to the right.



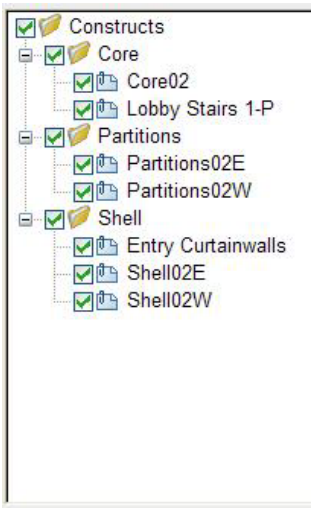
- Open the 2nd floor core construct and drag the "Typical Core" element into it, then save and close the file.
- Create the stair tower construct. This construct will span multiple levels as well as divisions. Create the construct in the "Core" category. Provide a name of "Lobby Stairs 1-P" and an appropriate description. In the "Assignments" area, select the "East Wing" and "West Wing" divisions for the 1st, 2nd, 3rd and "Penthouse" levels, then select "OK".
- Open the stair tower construct and insert the source drawing "**C:\Datafiles\BD31-4L\Source Drawings\Constructs\Stair Tower**". Make sure you insert this drawing exploded.
- Save and close the stair tower construct.
- Create the entry curtainwalls construct will also span multiple levels and divisions. Since it starts on the first floor and goes through the penthouse level, it will have much the same properties as the stair tower construct. Create the construct in the "Shell" category, provide a name of "Entry Curtainwalls" and select both the "East Wing" and "West Wing" divisions for all levels except for the garage level.

- Open the "Entry Curtainwalls" construct and insert the source drawing "**C:\Datafiles\BD31-4L\Source Drawings\Constructs\Curtainwalls**" into the file, exploded.
- Save the construct and close it.

Creating View Drawings

Plan Views

- Navigate to the "Views" tab. Select the "Views" category, right click and create a new category called "Plans".
- In the "Plans" category, right click and select the option to create a new "General" view. This will place you in the "New View" wizard. On the first screen, provide a name of "FP02" (and a description if you wish), then select "Next".
- In the next screen ("Context"), choose the "East Wing" and "West Wing" divisions for the 2nd floor only. This will specify that you only want those constructs that apply to those parts of the model included. Click "Next".



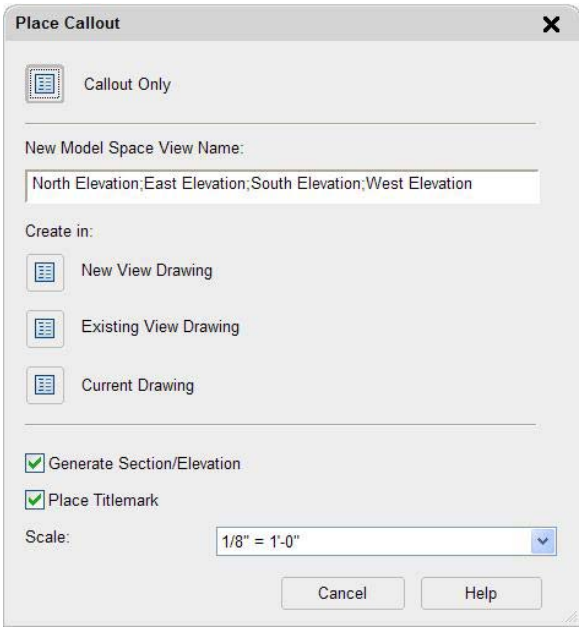
- In the next screen ("Content"), you verify the actual constructs to be included. You should note that all 2nd floor constructs are included, as well as any spanning constructs that exist at least in part in any of the divisions or levels you have specified for the view, as in the image to the right.
- Select "Finish", then double click the view in Project Navigator to open it. A complete floor plan of the 2nd floor should be created from external references of your 2nd floor constructs. You might want to generate a 3D view as well and note that the curtainwalls and stair tower constructs are placed at the correct relative elevation to the other 2nd floor constructs.
- Save and exit the view.

Elevations, Sections and Callouts

- To facilitate things, open a version of the project that is at a later stage of completion. In Project Navigator, regardless of the tab that you are currently on, select the "Launch Project Browser" button at the bottom (refer to the image on the right).

- In Project Browser, make the project "Apartments – Complete" current. Take a moment in Project Navigator to note that many more constructs have been added to complete the model and there have also been a few additional views created as well.
- Open the "FP02" View, which is the same 2nd floor plan view that you created earlier.
- From the "Document" Tool Palette group, select the "Callouts" tab.
- On the "Callouts" tab, select the "Exterior Elevation Mark A3" tool (See the image to the right), which will allow you to create four elevation views of the model at the same time.

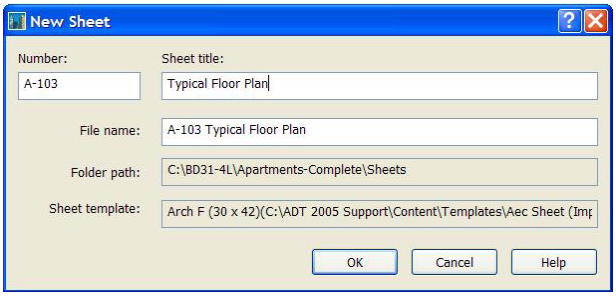
- At the prompt to specify the elevation region, place a window around the entire floor plan, leaving some space around the edges.
- In the "Place Callout" dialog that appears, match your settings with the image to the right.
- Select the "New View Drawing" button.
- In the next dialog box, specify a view name of "Exterior Elevations" and make sure you set the category to be "Views\Elevations".
- Select "Next" to page through the next two dialog boxes, noting that all model components are automatically selected.
- When prompted to select the elevation insertion point and spacing, select a point a fair distance to the right of the flooplan and then select another point about 20 or 30 feet to the right of the first point.



- Once all four elevations have been created (it will probably take a few minutes), expand the "Elevations" category in the "Views" tab. There should be a new view drawing named "Exterior Elevations". Expand it by selecting the "+" sign. You should see four views; one for each elevation.
- Select the view entitled "South Elevation" and double click on it. The drawing should open and place you in that view. This is where you would edit the elevation and annotate it.
- Close the "Exterior Elevations" drawing (you don't need to save).
- Save the view "FP02", but do not close it.

Creating Plot Sheets

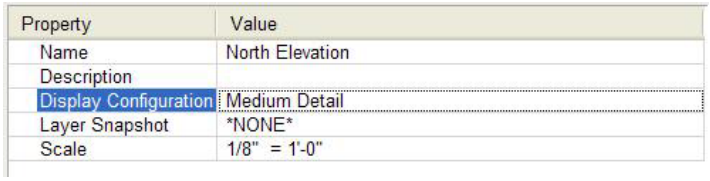
- Navigate to the "Sheets" tab of Project Navigator. This is actually the *Sheet Set Manager* that comes with AutoCAD 2005, tightly integrated with the project management features of Architectural Desktop 2005.
- Under the "Architectural" subset, select the "Plans" subset and right-click, selecting **New->Sheet**
- In the new sheet dialog, enter a sheet number of "A-103" and a sheet name of "Typical Floor Plan" as in the image to the right. Select "OK".



- Double-click on your new sheet to open it.
- Navigate to the "Views" tab and select the "FP02" view from the "Plans" category, expanding it out by selecting the "+" sign. Right click on the view "Typical Floor Plan" and select "Properties". Take note of the settings for Display Configuration and scale and select "Cancel".
- Drag and drop the "Typical Floor Plan" view into your sheet.
- Save the sheet.

Set the properties for your elevation views.

- Navigate to the "Views" tab and select the "North Elevation" view in the "Exterior Elevations" view drawing. Right click and select "Properties". Match your settings with the image to the right.



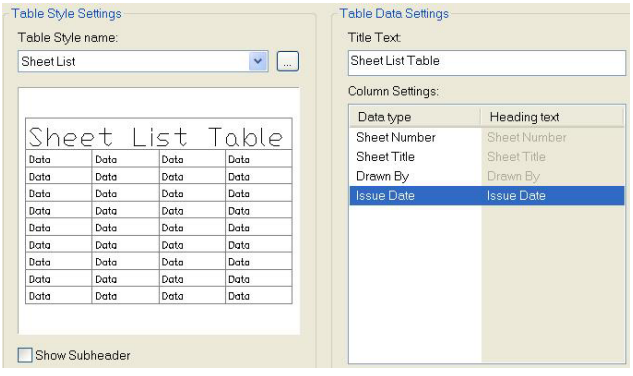
- Make the same settings to the remaining elevations views.

Create an elevation sheet.

- Navigate to the "Sheets" tab and select the "Elevations" subset.
- Right-click and select **New->Sheet**.
- Provide a number of "A-201" and a sheet name of "Exterior Elevations".
- Open the new sheet by double-clicking on it.
- Navigate to the "Views" tab and select the "Exterior Elevations" view drawing, then drag and drop it (the entire drawing) into your sheet. All four views will be placed on your sheet. Locate each one as you are prompted (they will probably not all fit on the sheet. For purposes of this exercise, let them run over the sheet border if necessary.
- Save the current sheet drawing.
- Navigate back to the "Sheets" tab and select your "Typical Floor Plan" sheet. Double click on it to return it to the drawing editor.
- Type "REA" at the command line to regenerate all viewports, then ZOOM in to one of the elevation callouts. It should now indicate the correct detail and sheet number.

Create a cover sheet with a sheet index.

- Right click on the "General" subset under the "Architectural" subset and create a new sheet with the number "G-101" and title "Cover Sheet".
- Open the cover sheet drawing by double-clicking on it.
- Right-click on the "Apartments" header for the sheet set in the "Sheets" tab and select "Insert Sheet List".
- In the sheet list dialog box, make sure the table style is set to "Sheet List" and that the current data fields to use (shown on the right side of the dialog box) are "Sheet Number", "Sheet Title" and "Drawn by".
- Select the "Add" button on the right to add a field to the table and change the default "Sheet Number" field in the new entry to "Issue Date" by picking it from the drop down list. Your dialog should look similar to the image to the right. (Note the "Issue Date" field is a custom sheet field that is not normally present in the default sheet set data file).
- Select "OK" to place the sheet index.



Once placed on the sheet, the sheet index will list the sheets in the order that they appear in the "Sheets" tab of Project Navigator. They can be rearranged and the sheet index updated by right-clicking on it. New fields can be added at any time.

Plotting

Plotting in Architectural Desktop 2005 is based on the same concepts and basic tools that were introduced in AutoCAD 2000, however using the Sheet Set Manager you can automate them to a large extent. In this exercise, we will publish our sheets to a multi-sheet DWF, however using Page Setups you can automate batch plotting to virtually any plot device that you currently use.

- Close out of all open drawings, saving when prompted. Make sure you are open in a blank, non-project-related file.
- Right-click on the "Architectural" subset, then select **Publish->Publish to DWF**. Save the DWF file to the file "**C:\Datafiles\BD31-4L\Apartments.dwf**".
- Once the DWF has been created (it may take a few minutes), use Windows Explorer to navigate to the folder "C:\Datafiles\BD31-4L" and double click on the "Apartments.dwf" file. It should appear in the DWF Viewer. Spend a few moments browsing through the pages of the plot set.

Summary

In these exercises you:

- Created a new project and assigned levels
- Created new elements and constructs and combined them together to build model components
- Combined the various model elements into cohesive views.
- Created section and elevation views with linked callouts in the plan views.
- Assembled your views on sheets and created a title sheet.
- Plotted your drawing set to a multi-page DWF file.

In this lab, you should have gotten a "feel" for the workflow in Project Navigator. There are several additional scenarios and options that time does not allow coverage for in this session, however. You should spend time with the online tutorials and just "playing around" with Project Navigator to become more comfortable with it's features and capabilities.